between two optical wireless units wherein information is transmitted between the optical wireless units via light beams, the method comprising:

at the first optical wireless unit:

moving the light beam in a first prespecified pattern;

receiving detector range data from the second optical wireless unit; and

moving the light beam in a second prespecified pattern;

at the second optical wireless unit:

determining detector range;

transmitting the detector range;

determining reference positions;

generating a table of detector readings ; and wherein the first prespecified pattern is a spiral pattern with a specified number of revolutions, first determining step comprising:

calculating a signal strength metric for each revolution;

maintaining a maximum signal strength;

comparing the signal strength metric with a threshold;

setting a radius of dynamic range if the signal strength metric is less than the threshold; and transmitting the radius to the first optical wireless unit.

22. (Cancelled)

23. (Currently Amended) The method of claim [22,] <u>21</u>, wherein the second optical wireless unit senses the light beam with its optical detectors a plurality of times per revolution of the light beam, the signal strength metric is expressed as:

$$signalStrength = \sum_{\substack{positional\\data}} (NE^2 + SE^2 + SW^2 + NW2)$$

where: NE, SE, SW, and NW are data provided by the optical detectors and the summation is over all measured positional data points in a single revolution.

24. (Currently Amended) The method of claim [22,] <u>21</u>, wherein the threshold is a small fraction of the maximum signal strength.

25. (Original) The method of claim 24, wherein the threshold is 12.5 percent of the maximum signal strength.

26. (Currently Amended) The method of claim [22,] 21, wherein the radius of dynamic range is the revolution whose signal strength is less than the threshold.

27. (Currently Amended) The method of claim [22,] 21, wherein the radius of dynamic range is the final revolution of the spiral if the signal strength of all the revolutions are greater than the threshold.

28. (Previously Presented) The method of claim 21, wherein the second prespecified pattern is scaled according to the received detector range data.

29. (Original) The method of claim 21, wherein the light beam pauses at each reference position as it follows the second prespecified pattern, the generating step comprising:

polling the optical detectors for data as the light beam pauses; and saving the polled data.

30. (Original) The method of claim 29, wherein the second optical wireless unit polls the optical detectors for data a plurality of times as the light beam pauses and computes an average of the data.

31. (Original) The method of claim 29, wherein the generating step further comprising: linearizing the data in the table; and creating a second table with the linearized data.

32-34. (Cancelled)

35. (Currently Amended) A method for providing a common coordinate basis between two optical wireless units wherein information is transmitted between the optical wireless units via light beams, the method comprising:

at the first optical wireless unit:

moving the light beam in a first prespecified pattern; receiving detector range data from the second optical wireless unit; and moving the light beam in a second prespecified pattern;

at the second optical wireless unit:

determining detector range;

transmitting the detector range;

determining reference positions;

generating a table of detector readings and,

wherein the method further comprises selecting a position from the table based on an optical detector reading comprising polling the optical detectors for an optical detector reading, wherein the optical detector reading is determined from data provided by the plurality of optical detectors and is expressed as:

$$remote_x = NE + SE - SW - NW$$
$$remote_r = NE - SE - SW + NW$$

where: $remote_x$ and $remote_y$ are the optical detector readings, and NE, SE, SW, and NW are data from the optical detectors; generating a set of table indices; and selecting a position using the set of table indices [The method of claim 34,] wherein the set of table indices are generated from the optical detector reading and is expressed as:

$$tentry_x = trunc(s_{xi} remote_x + remote\ xmin)$$
$$tentry = trunc(s_{yl} remote + remote_{y\min}$$

$$s_{yl} = \frac{NumTableEntries \qquad\qquad NumTableEntries}{remote_{ymax} \qquad\qquad + remote_{y\min}}$$

where: $s_{x1} =$

$remote_{xmax} + remotexmin$

NumTableEntries is a number of entries in the table, $remote_{xmax}$, $remote_{xmin}$, $remote_{ymax}$, and $remote_{ymin}$ are maximum and minimum values along columns and rows of the table, and the trunc() operator truncates a numerical value to a specified number of decimal places; and transmitting the position to the first optical wireless unit after generating the table.

36. (Original) The method of claim 35, wherein the position is stored in the table and is selected via the expressions:

$$X_{cmd} = (table_x(tentry_x + 1) - table_x(tentry_x))^*$$
$$(remote_xS - tentry_x) + table_x(tentry_x)_y$$
$$_{cmd} = (table_y(tentry_y + 1) - table_y(tentry_x))^*$$
$$(remote_ys_{y1} - tentry_y) + table_y(tentry_y)$$

where: $table_x()$ and $table_y()$ are functions returning x and y entries from the table.

37-47. (Cancelled)